



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,142	10/30/2003	Won-Sang Park	21ST91310 US	3446
90323	7590	03/16/2010	EXAMINER	
Innovation Counsel LLP 21771 Stevens Creek Blvd Ste. 200A Cupertino, CA 95014				PIZIALI, JEFFREY J
ART UNIT		PAPER NUMBER		
2629				
			MAIL DATE	DELIVERY MODE
			03/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/699,142	PARK ET AL.	
	Examiner	Art Unit	
	Jeff Piziali	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 January 2010 and 17 August 2009.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3,5,7-11,15-17 and 20-25 is/are pending in the application.
- 4a) Of the above claim(s) 1 and 3 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 5,7-11,15-17 and 20-25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 October 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

2. ***Applicant's election without traverse of Invention I (Claims 5, 7-11, 15-17, and 20-25)*** in the reply filed on *4 January 2010* is acknowledged and appreciated.
3. ***Claims 1 and 3 are withdrawn*** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made ***without*** traverse in the reply filed on *4 January 2010*.
4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. *Claims 5, 7-11, 15-17, and 20-25* are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah et al (US 7,280,102 B2)* in view of *Bergquist (US 7,184,009 B2)*.

Regarding claim 5, *Abileah* discloses a liquid crystal display device [e.g., Fig. 15] comprising:

a liquid crystal display panel [e.g., Fig. 1: 50] including
a plurality of pixels [e.g., Fig. 13: Clc] and
a plurality of sensing parts [e.g., Fig. 13: PhotoTFT + Cst2 + ReadoutTFT],
each of the sensing parts having a light-sensitive switching device [e.g., Fig. 13:
PhotoTFT + Cst2] which is directly responsive to light and
each of the sensing parts generating an analog signal [e.g., Fig. 13: Readout] including a
location information [e.g., *touch location information*] in response to an incident light,
the location information indicating a location where the light enters; and
a control part [e.g., Fig. 13: 412] receiving the analog signal and transforming the analog
signal [e.g., Fig. 13: *via processor*] into a digital signal [e.g., Fig. 13: *processor output*],
the liquid crystal display device being controlled in response to the digital signal,
wherein each of the pixels includes
a gate line [e.g., Figs. 2 & 13: *select line 406*],
a data line [e.g., Figs. 2 & 13: *transistor source line 400, or alternatively "common" line
408*],
a first switching device [e.g., Figs. 2 & 13: *latching transistor 200*] electrically connected
to the gate line and the data line [e.g., Figs. 2 & 13: *wherein the transistor 200 is directly
connected to the source line 400, and "electrically connected" to the common line 408 via
capacitor Cst*], and
a pixel electrode [e.g., Fig 13: 402] electrically connected to the first switching device,

wherein the light-sensitive switching device is a second switching device [e.g., Fig 13: *PhotoTFT + Cst2*] that is turned on in response to the incident light to output a first analog signal [e.g., Fig 13: *Readout signal = the voltage stored/latched by capacitor Cst2 = a "data line" voltage of 4.5v or a "common line" voltage of -10v, responsive to the amount of incident light*] that is received from the data line [e.g., Fig 13: *wherein at least amplifier 412 "receives" the first analog signal "from the data line" -- i.e., common line 408 to source line 400 to amplifier 412*] [e.g., see Column 13, Lines 9-14: *wherein Abileah states, "new data 420 provided on data line 400 may be 4.5 volts which is latched to the pixel electrode 402 and the photo TFT 404 by imposing a suitable voltage on the select line 406. In this manner, the data voltage is latched to both the pixel electrode and a corresponding photo-sensitive circuit"*], each of the sensing parts further comprising a third switching device [e.g., Fig 13: *ReadoutTFT*] outputting the first analog signal provided from the second switching device in response to a second analog signal [e.g., Fig. 13: *select line voltage during the readout stage*] applied to the gate line (see the entire document, including Column 5, Lines 4-30 and Column 12, Line 62 - Column 13, Line 42).

Firstly, the claimed "*data line*" is broad enough in scope as to read on either/both of *Abileah's* source line [e.g., Fig 13: 400] and/or common line [e.g., Fig 13: 408].

In the context of present claim language, the "*data line*" is merely required to:

1. Be "*electrically connected*" to the first switching device (claim 1, line 11).
2. Transmit the first analog signal (claim 1, line 14).
3. "*Diverge*" from the first source electrode of the second switching device (claims 9 &

20, lines 2-3).

Abileah's source line [e.g., Fig 13: 400] and common line [e.g., Fig 13: 408] both fulfill those structural and operational requirements.

During a storage/latching cycle, *Abileah's* light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] is first latched with a 4.5v signal from the source line [e.g., Fig 13: 400].

1. If the incident light is dark enough, during the readout cycle, the light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] will output this same, substantially unaltered 4.5v signal to the readout amplifier [e.g., Fig 13: 412].
2. On the other hand, if the incident light is bright enough (and for long enough), during the readout cycle, the light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] will instead output a -10v signal, from the common line [e.g., Fig 13: 408], to the readout amplifier [e.g., Fig 13: 412].

In either situation, the light-sensitive switching device outputs a "*first analog signal*" [e.g., 4.5v or -10v] that is received from a "*data line*" [e.g., Fig. 13: 400 or 408].

Secondly, the claimed limitation, "*a second switching device that is turned on in response to the incident light to output a first analog signal that is received from the data line*" is broad enough in scope as to read on **Abileah's** amplifier [e.g., Fig 13: 412] "receiving" a first analog signal [e.g., 4.5v or -10v] "from the data line" [e.g., Fig. 13: common line 408 to source line 400 to amplifier 412].

The present claim language does not specify what claimed element, if any, is required to "receive" the signal from the data line.

As explained above, **Abileah's** light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] does indeed output a "*first analog signal*" [e.g., 4.5v or -10v] that is received, by the light-sensitive switching device, from a data line [e.g., Fig. 13: 400 or 408].

However, even were it to be shown that **Abileah's** light-sensitive switching device doesn't itself receive the first signal from the "*data line*":

Abileah's light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] clearly does output a "*first analog signal*" [e.g., 4.5v or -10v] that is received, by the amplifier [e.g., Fig 13: 412], from either data line [e.g., Fig. 13: common line 408 to source line 400 to amplifier 412].

Therefore, at the very least **Abileah's** amplifier receives the first signal from the data line.

Thirdly, although **Abileah's** readout data signals would arguably need to be converted into a digital format for processing by the processor -- and doing so would have been well known and commonly understood at the time of invention -- **Abileah** does not appear to expressly disclose analog to digital conversion of the readout data signals.

However, **Bergquist** does disclose a liquid crystal display device [e.g., Fig. 4: 100] comprising:

a liquid crystal display panel [e.g., Fig. 4: 102] including

a plurality of pixels [e.g., Fig. 5: 23] and

a plurality of sensing parts [e.g., Fig. 5: 115],

each of the sensing parts having a light-sensitive switching device [e.g., Fig. 5: 114]

which is directly responsive to light and

each of the sensing parts generating an analog signal [e.g., Fig. 6: 20] including a location information [e.g., *touch location information*] in response to an incident light,

the location information indicating a location where the light enters; and

a control part [e.g., Fig. 6: 132, 134] receiving the analog signal and transforming the analog signal into a digital signal,

the liquid crystal display device being controlled in response to the digital signal (*see the entire document, including Column 2, Lines 20-56 and Column 4, Line 56 - Column 9, Line 37*).

Abileah and **Bergquist** are analogous art, because they are from the shared inventive field of touch and light sensitive liquid crystal displays using phototransistors.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use **Bergquist's** analog-to-digital converter [**Bergquist**: Fig. 6: 134] to convert **Abileah's** analog readout data prior to being sent to **Abileah's** processor [**Abileah**: 412 output signals to the processor], so as to transform the location information into a format suitable for processing.

Regarding claim 7, **Abileah** discloses each of the sensing parts further comprises a first sensor line [e.g., Fig 13: 414] receiving the first analog signal from the third switching device and transmitting the first analog signal to the control part (*see the entire document, including Column 12, Line 62 - Column 13, Line 42*).

Regarding claim 8, **Abileah** discloses each of the sensing parts further comprises a second sensor line [e.g., Fig 13: 408 or 400 (i.e., whichever one is not taken to be the "data line"), or alternately the line connecting Cst2 and ReadoutTFT] (*see the entire document, including Column 12, Line 62 - Column 13, Line 42*).

Regarding claim 9, **Abileah** discloses the second switching device includes a first gate electrode diverging from the second sensor line, a first source electrode diverging from the data line, and a first drain electrode being electrically connected to the third switching device (*see the entire document, including Fig. 13; Column 12, Line 62 - Column 13, Line 42*).

Regarding claim 10, **Abileah** discloses the third switching device includes a first gate electrode diverging from the gate line, a first source electrode being electrically connected to the second switching device, and a first drain electrode being electrically connected to the first sensor line (*see the entire document, including Fig. 13; Column 12, Line 62 - Column 13, Line 42*).

Regarding claim 11, **Abileah** discloses the first switching device, the second switching device and the third switching device each correspond to an amorphous-silicon thin film transistor (*see the entire document, including Figs. 4A-4H; Column 5, Line 42 - Column 6, Line 9*).

Regarding claim 15, **Abileah** discloses the pixel electrode comprises a transparent electrode [*e.g., Fig. 4G*] and a reflective electrode [*e.g., Fig. 7: black matrix*] including a transmission portion [*e.g., Fig. 7: opening in black matrix portion*] and a reflection portion [*e.g., Fig. 7: black matrix portion*], the reflective electrode facing the transparent electrode (*see the entire document, including Column 5, Line 42 - Column 8, Line 15 and Column 10, Lines 40-46*).

Regarding claim 16, **Abileah** discloses the reflective electrode comprises an opening window [*e.g., Fig. 7: opening in black matrix portion*] uncovering the sensing part, the incident light passing through the opening window and arriving at the sensing part (*see the entire document, including Column 6, Line 26 - Column 8, Line 15*).

Regarding claim 17, **Abileah** discloses the incident light is an infrared light [*e.g., Fig. 24: IR LED*] (*see the entire document, including Fig. 7; Column 18, Line 54 - Column 19, Line 12*).

Regarding claim 20, **Abileah** discloses the second switching device includes a first source electrode diverging from the data line, and a first drain electrode being electrically connected to the third switching device, wherein the first sensor line, the first source electrode and the first drain electrode of the second switching device comprise a transparent and electrically conductive material [*e.g., indium tin oxide*] (*see the entire document, including Figs. 4A-4H; Column 5, Line 42 - Column 6, Line 9*).

Regarding claim 21, **Abileah** discloses the pixel electrode comprises a transparent electrode [*e.g., Fig. 4G*] and a reflective electrode [*e.g., Fig. 7: black matrix*] including a transmission portion [*e.g., Fig. 7: opening in black matrix portion*] and a reflection portion [*e.g., Fig. 7: black matrix portion*], the reflective electrode facing the transparent electrode (*see the entire document, including Column 5, Line 42 - Column 8, Line 15 and Column 10, Lines 40-46*).

Regarding claim 22, **Abileah** discloses the reflective electrode comprises an opening window [*e.g., Fig. 7: opening in black matrix portion*] exposing the light-sensitive switching device, the infrared light passing through the opening window and arriving at the light-sensitive switching device (*see the entire document, including Column 6, Line 26 - Column 8, Line 15*).

Regarding claim 23, **Bergquist** discloses the control part comprises:

a connecting part [e.g., Fig. 4: 112, CPU] to receive the analog signal and

transform [e.g., Fig. 6: via 134] the analog signal into the digital signal in response to a

first control signal;

a first driving part [e.g., Fig. 4: 110] to drive the liquid crystal display panel in response to a second control signal; and

a second driving part [e.g., Fig. 4: 106] to provide the connecting part with the first control signal and

to receive the digital signal from the connecting part to output the second control signal

(*see the entire document, including Column 2, Lines 20-56 and Column 4, Line 56 - Column 9, Line 37*).

Regarding claim 24, **Bergquist** discloses the first driving part is formed in a chip,

the chip being mounted on the liquid crystal display panel,

the chip having the connecting part therein (*see the entire document, including Column 4, Lines 18-31*).

Regarding claim 25, **Bergquist** discloses the first driving part and the connecting part are integrally formed in the liquid crystal display panel (*see the entire document, including Column 4, Lines 18-31*).

Response to Arguments

8. Applicant's arguments filed on *17 August 2009* have been fully considered but they are not persuasive.

The Applicant contends, "***Abileah*** discloses a light-sensitive switching device that is connected to a common line, and a readout TFT that is connected to a data line. Thus, the light-sensitive switching device of ***Abileah*** receives signals from the common line and outputs signals to the data line, and does not disclose outputting an analog signal received from the data line.

Therefore, ***Abileah*** does not disclose either the light-sensitive switching device outputting a first analog signal received from a data line or the third switching device outputting the first analog signal provided from the light-sensitive switching device (the second switching device).

Furthermore, ***Bergquist*** merely discloses one TFT in a sensing part and does not otherwise remedy the deficiencies of ***Abileah*** noted above" (see Page 9 of the Response filed on *17 August 2009*). However, the examiner respectfully disagrees.

The claimed "data line" is broad enough in scope as to read on either/both of ***Abileah's*** source line [e.g., *Fig 13: 400*] and/or common line [e.g., *Fig 13: 408*].

In the context of present claim language, the "*data line*" is merely required to:

1. Be "*electrically connected*" to the first switching device (claim 1, line 11).
2. Transmit the first analog signal (claim 1, line 14).
3. "*Diverge*" from the first source electrode of the second switching device (claims 9 & 20, lines 2-3).

Abileah's source line [e.g., Fig 13: 400] and common line [e.g., Fig 13: 408] both fulfill those structural and operational requirements.

During a storage/latching cycle, *Abileah's* light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] is first latched with a 4.5v signal from the source/data line [e.g., Fig 13: 400].

1. If the incident light is dark enough, during the readout cycle, the light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] will output this same, substantially unaltered 4.5v signal to the readout amplifier [e.g., Fig 13: 412].
2. On the other hand, if the incident light is bright enough (and for long enough), during the readout cycle, the light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] will instead output a -10v signal, from the common/data line [e.g., Fig 13: 408], to the readout amplifier [e.g., Fig 13: 412].

In either situation, the light-sensitive switching device outputs a "*first analog signal*" [e.g., 4.5v or -10v] that is received from a "*data line*" [e.g., Fig. 13: 400 or 408].

Additionally, the claimed limitation, "*a second switching device that is turned on in response to the incident light to output a first analog signal that is received from the data line*" is broad enough in scope as to read on *Abileah's* amplifier [e.g., Fig 13: 412] "receiving" a first analog signal [e.g., 4.5v or -10v] "from the data line" [e.g., Fig. 13: common line 408 to source line 400 to amplifier 412].

The present claim language does not specify what claimed element, if any, is required to "receive" the signal from the data line.

As explained above, *Abileah's* light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] does indeed output a "*first analog signal*" [e.g., 4.5v or -10v] that is received, by the light-sensitive switching device, from a data line [e.g., Fig. 13: 400 or 408].

However, even were it to be shown that *Abileah's* light-sensitive switching device doesn't itself receive the first signal from the "*data line*":

Abileah's light-sensitive switching device [e.g., Fig. 13: PhotoTFT + Cst2] clearly does output a "*first analog signal*" [e.g., 4.5v or -10v] that is received, by the amplifier [e.g., Fig 13: 412], from either data line [e.g., Fig. 13: common line 408 to source line 400 to amplifier 412].

Therefore, at the very least *Abileah's* amplifier receives the first signal from the data line.

Applicant's arguments with respect to *claims 5, 7-11, 15-17, and 20-25* have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
11 March 2010